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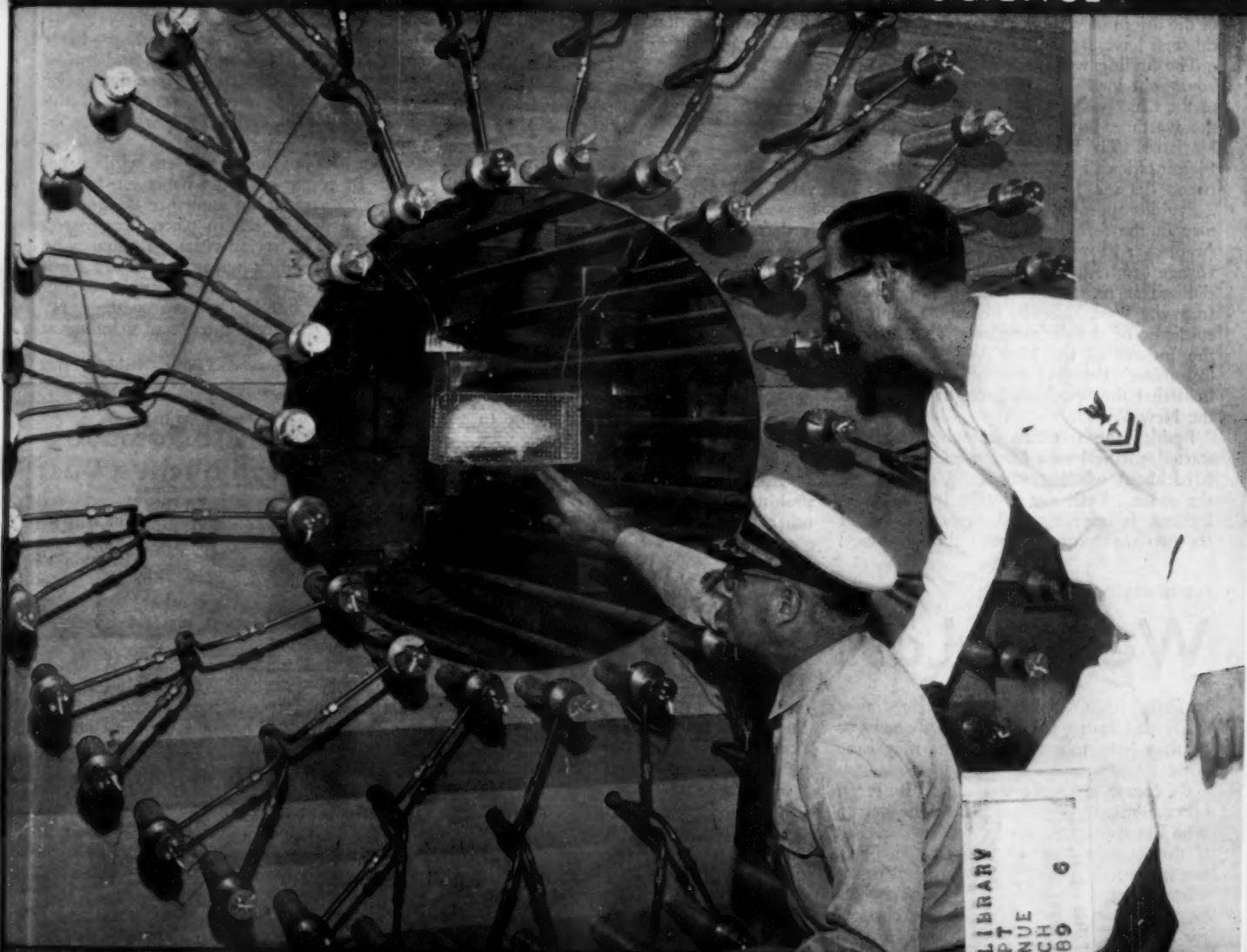
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October 18, 1952

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Gamma Ray Sprayer

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ARCHAEOLOGY

Discover Prehistoric Yaws

Syphilis-like disease discovered in bones of teen-age girl found on wartime Tinian beach in Marianas, giving another piece to fit in puzzle of origin of yaws.

► PEOPLE OF the South Pacific had yaws, a syphilis-like disease, long before Columbus discovered America or Magellan sailed around the world.

This discovery, announced by Dr. T. Dale Stewart of the Smithsonian Institution in Washington, fits another piece in the puzzle of the origin of yaws and syphilis that medical men have argued about for many years.

The finding was made in examination of bones obtained by Dr. Alexander Spoehr of the Chicago Natural History Museum on the wartime Blue Beach of Tinian in the Marianas. The bones were those of a 13- or 14-year-old child who died sometime between 700 and 1000 A.D.

Syphilis appeared for the first time in history in the form of a great epidemic that swept over Europe just after Columbus' first voyage to America. Many authorities claimed it must have been brought back from the West Indies by his sailors. But an epidemic of the disease also swept through the Indians of the New World just after Columbus' voyage. So other authorities held that the Spaniards brought syphilis to the New World.

Besides the question of where syphilis started, medical men have argued long and hard about whether yaws and syphilis are the same. Both are present in the West Indies. It is pretty well agreed now that the two are separate diseases, though caused

by spirochete germs that can hardly be told apart and having much the same symptoms.

Whether yaws existed in prehistoric times in America is not known. There is no evidence of its existence at such an early period. This makes discovery of its existence in prehistoric times anywhere of considerable scientific interest.

How yaws got to the South Pacific is not known. First contact of white people with natives of the Marianas was in 1521 when Magellan discovered the islands, and the first white colony was not established there until 1668.

Dr. Stewart feels pretty sure that it was yaws and not syphilis that damaged the bones of the prehistoric child. The reason is that the bones were from a child, and yaws attacks children more often than syphilis does.

The age of the child's bones was determined by the radiocarbon dating method of Dr. W. F. Libby of the University of Chicago, applied to a shell found in the same midden. Archaeologists said the midden seemed to be a one-period site, with everything found in it belonging to the same period.

The finding, Dr. Stewart said, should lead to renewed search for evidence of yaws in prehistoric times in the West Indies and other tropical regions.

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PUBLIC HEALTH

Weight Loss Symptoms

► THE PERSON who has lost weight, tires easily and feels weak may have diabetes or he may have tuberculosis, or he may have both.

Of course, these symptoms can also mean other ailments, and in any case the person who has them should consult a doctor. But if the examination shows he has diabetes, the patient should then be examined to see whether he also has tuberculosis. And patients with tuberculosis should be checked for diabetes.

The reason is that there is more tuberculosis among diabetics than among non-diabetics. A study in Philadelphia showed that among 3,106 known diabetics, the prevalence of tuberculosis was 8.4%, twice that found among 72,000 apparently healthy industrial workers of comparable age, sex and race.

Tuberculosis in the diabetic appears to run a more severe course than in the non-diabetic, and is more likely to be acutely

progressive in type, says Dr. David A. Cooper of Philadelphia, president of the American Trudeau Society which is the medical section of the National Tuberculosis Association.

Dr. Cooper points out that although diabetic control is difficult in the presence of active tuberculosis, the problem is not as great since the advent of newer insulins for diabetes and drugs for tuberculosis treatment.

Once good control of diabetes has been established and maintained, he states that the outlook for the tuberculosis disease does not differ too much from that of the non-diabetic patient.

"In the therapy of diabetic tuberculosis," he states, "nutrition is of paramount importance. No vigorous effort should be made to reduce the overweight diabetic who has tuberculosis until the tuberculosis is definitely inactive. A diet of 2,500 to 3,000 calories is advisable with a minimum of 100

grams of protein a day. On general principle, supplementary vitamins are advisable.

"The advent of insulin enables the diabetic to eat an adequate diet, which is essential for all tuberculosis patients. Collapse or surgical therapy and chemotherapy may be used as successfully in the diabetic as in the non-diabetic, and perhaps should be resorted to more promptly."

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DENTISTRY

Tooth Grinding Chips And Loosens Teeth

► DO NOT grind your teeth, warns Dr. Arthur F. Schopper, Kansas City, Mo., dentist.

Unchecked, the tooth-grinding habit causes teeth to chip and loosen and makes for considerable erosion and sensitiveness of the gums, he declares in a report in the *Journal of the American Dental Association*.

Most people grind their teeth while sleeping. In severe cases the habit can be corrected by a retaining appliance designed to keep the dental arch in place after correction of tooth irregularities. Persons who cannot bring their upper and lower front teeth together cannot use the appliance, but they can use bite blocks between the upper and lower rear teeth to prevent grinding at night.

Science News Letter, October 18, 1952

BIOPHYSICS

Body Reacts to Remove Inhaled Radioactive Dust

► STUDIES WITH rabbits at the University of California's Atomic Energy Project at Los Angeles indicate that inhalation of insoluble radioactive dust may not be as serious as previously thought because of "built in" safety factors inside the body.

Research by Dr. George V. Taplin has shown that certain mechanisms in the respiratory tract remove insoluble foreign particles in a few days.

These mechanisms in rabbits include secretions from respiratory membranes, small hair-like projections and certain scavenger cells. Similar mechanisms in man would perhaps react the same way, he thinks.

Further investigation revealed that simultaneous whole-body radiation increased the efficiency of these mechanisms. A temporary depression of scavenger cell activity occurred. Later on, however, they became overactive.

"This depression of scavenger cell activity may be a cause of many illnesses and deaths resulting from radiation injury," said Dr. Taplin. It enables bacteria in the body, normally held in check, to invade the blood stream.

"This suggests that use of drugs stimulating scavenger cell activity together with certain antibiotics might reduce the number of radiation deaths considerably."

Science News Letter, October 18, 1952

MEDICINE

Birth Control Using Pills

Conception can be prevented by taking several pills of phosphorylated hesperidin each day, experiences of 298 out of 300 couples show.

► **SUCCESSFUL BIRTH** control by pills has been achieved by 298 out of 300 couples, Dr. Benjamin F. Sieve of Boston reports in *Science* (Oct. 10).

The two failures "are of no scientific significance," Dr. Sieve states, because the couples failed to cooperate in taking the pills.

The pills are made of the chemical, phosphorylated hesperidin. Rat experiments showing that this chemical might become a successful birth control pill were previously made by Dr. Sieve and by other scientists. (See SNL, April 19, p. 252.)

The chemical in the pills acts to reinforce the outer covering of the egg cell so that sperm cells from the male cannot pierce this barrier to fertilize the egg.

These pills can be taken indefinitely without causing any harmful effects, Dr. Sieve states. And they do not cause permanent infertility. When a couple that has been practicing birth control by this means wants to have a child, they simply stop taking the pills.

The pills are not considered the answer to the problem of birth control in its broadest aspects. The method, simple as it may seem to many American couples, is too complicated for primitive, ignorant people throughout the world.

The pills must be taken every day, and not just once a day, either. Dr. Sieve's method required the husband to take the pills three times a day and the wife four times a day. The reason is that the amount of the chemical in the blood must be kept continuously at a certain level for it to be effective. Also both man and woman must take the pills for 10 days consecutively before anti-fertility, or birth control, action can be assured.

Most Willing to Take Pills

The two failures in Dr. Sieve's 300 couples occurred because one couple did not take the pills during a 40-day vacation trip and the other couple did not take the pills during a week-long drinking spree. Most of his patients, however, even those who all their lives had disliked taking pills, seemed willing to take these and did not mind having to take them three or four times a day.

The ages of the women ranged from 17 to 43 years. All the couples had had at least one normal child before starting the pills. All were volunteers who were not afraid of failure with the pills, as they were mentally and financially prepared to have another child. All pledged not to use any

other method of birth control during the trial of the pills.

Couples used the method from three to 30 months, stopping when they wanted to have another child. Out of the group, 123 stopped the pills, had a wanted baby, and then started taking the pills again. Another 97 couples, after a period of birth control, are now expecting wanted babies.

None of those wanting babies had any difficulty in impregnation. The longest period required for conception was 9 to 13 weeks. There were three miscarriages, five premature births and five caesarean births. All the others were normal, and the babies were healthy and normal.

Report Is Preliminary

The total woman-years of protection for the 300 couples was 317.1, far above the American Medical Association standard of 200 woman-years for any group studied for 12 months.

Dr. Sieve considers his report a preliminary one and says much more data from patients must be accumulated before general use of this birth control chemical is warranted.

Couples wanting to try the method will

have to do so under a doctor's direction. The chemical cannot be obtained at drug-store counters.

Phosphorylated hesperidin, surprisingly, may also have fertility-stimulating activity. This is suggested by the experience of two of the 300 couples. These two had been chosen because each couple had had one normal child followed by a long period of apparent inability to have children. Both husbands and wives had been declared normally fertile by competent specialists. These two couples, after taking the birth control pills for a time, stopped them and the wives became pregnant within a month. In only eight other couples did pregnancy come so soon after stopping the pills.

More study will be needed to explain this, Dr. Sieve points out.

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WILDLIFE

Hunters Get Score Cards for Game

► **HUNTERS THIS** fall will get a chance, for the first time, to be part of a nationwide survey of duck, geese and coot, the Fish and Wildlife Service has announced.

Approximately 150 post offices now have a card form to be given to federal duck stamp purchasers, half of which is a score card for listing the numbers and kinds of waterfowl they bag. Data that each hunter furnishes about his personal waterfowl harvest will be used to analyze the relationship between hunter kills and bird season regulations. The system has successfully been used previously on a state-wide basis.

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BUFFALO HUNT—One of the dioramas in Chicago Natural History Museum's new hall of American Indians that opened on Oct. 11 is this one showing a Plains Indians' buffalo hunt. Groups of about 30 hunters, using arrows and lances, could kill as many as 300 buffaloes in 15 minutes.

AERONAUTICS

Jet-Noise Problem

► NO SOLUTION of the noise nuisance created by jet-propelled aircraft is yet in sight, but the problem is being tackled by aviation scientists both in government organizations and in the airplane manufacturing industry. Hopes are high that a successful method of decreasing the noise may soon be found.

The primary use of jet propulsion is now in military bombers and fighters, and the take-off noise is confined largely to military airfields. But jet propulsion is already in use in airliners, particularly those built in England, and jet noise will soon become a problem at many of the major commercial airports.

It is at take-off and landings that the jet planes creates the greatest noise nuisance. Unlike the conventional plane driven by reciprocating engines, from which much of the noise comes from the whirling propellers, the noises from the jet plane are generated inside the turbo-jet engine, with the primary noise coming from the gas discharge to the rear.

Shorter propeller blades, and the use of a larger number of blades than usual, lessen

propeller noises. Mufflers somewhat similar to those employed on automobiles lessen exhaust noises.

Important in solving the jet-noise problem are recent experimental studies carried out at the Langley Aeronautical Laboratory, Langley Field, Va., by the National Advisory Committee for Aeronautics. A report of the studies has been issued by the NACA. Entitled "Experimental Studies of Noises from Subsonic Jets in Still Air," it was prepared by Leslie W. Lassiter and Harvey H. Hubbard of the Langley Laboratory staff.

In general, they state, continuous-type jet engines are prolific generators of a random-noise spectrum that includes essentially all frequencies from the subaudible to the ultrasonic. The intensities in some parts of the spectrum are of such magnitude as to produce adverse physiological effects on man.

The noise field is directional, with the bulk of the sound energy radiated to the rear of the engine. The exhaust gas jet is found to be an intense source of noise as it mixes with the surrounding air.

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METEOROLOGY

Low Ceiling Forecasts

► FORECASTING WITH 95% accuracy what the weather over an airport will be in the next eight minutes is a goal the Weather Bureau has set for itself, it was learned.

If achieved, the predictions should result in more and safer bad weather landings at crowded airports. The eight-minute forecasts of slant range visibility are the goal of the Final Approach Visibility Studies project of the Weather Bureau, conducted for the Air Navigation Development Board.

The tremendous variability of weather conditions when there is a fog or a low ceiling over an airport is the problem the Weather Bureau has to lick. The bottom of a cloud ceiling is not smooth and flat, it is rough and jagged. From minute to minute, the ceiling may raise or lower 100 to 200 feet as the cloud moves across the airport. The density of fog is variable too, a measurement taken at one moment in one spot will usually not agree with a measurement taken the next moment at another spot on the same airfield.

The studies, under B. C. Haynes of the Weather Bureau, are aimed at being able to tell the pilot, as he leaves the stack of planes above an airport, just where and when he will be able to break through the overcast and see the airport and his landing runway.

New instruments, including a "light radar," may provide some of the answers to this problem. The light radar sends a pulsed beam of light upward. Its reflections from the bottom of the cloud are caught by

a receiver and indicated on a cathode ray tube, just as reflections of radio signals are caught by regular radar.

More and faster measurements of the cloud base with this and other instruments may lick the problem of the extreme variability of the base.

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TECHNOLOGY

Infrared Lamp Made With LP-Gas and Mantle

► INFRARED LIGHT will soon be available in a new lamp that uses "bottled" liquid petroleum gas, LP-gas for short, and a special mantle of treated rayon.

Infrared radiation was used in wartime for beacon lights, to control road blocks, for taking secret photographs of enemy installations, and in the "sniperscope" that enables sentries to pick off enemy prowlers in the dark.

The new infrared lamp was developed by Armour Research Foundation of the Illinois Institute of Technology, Chicago. The five-to-ten-pound device is lighter in weight than the types presently used, electric lamps powered by storage batteries, but just as bright, and promises to be cheaper.

The lamp will operate in tropical temperatures, or at minus 65 degrees Fahrenheit, the temperature sometimes encountered by high-flying planes photographing

enemy installations on the ground below, or at military installations in the far North.

Substitution of bottled gas for storage batteries gives the weight-saving. The problem of making a satisfactory gas mantle to emit infrared light was solved by making the mantle of knitted rayon mesh impregnated with salts of chromium and aluminum. When lighted, the rayon burns, leaving oxides of the two metals in the familiar form of a mantle. A flint lighter, hidden from view, is used to ignite the rayon.

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Persons without TV sets see video programs almost as often as those who own sets, a survey shows.

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GENERAL SCIENCE

Present Draft Inadequate

Scraping of bottom of manpower barrel within six months points up fact that armed forces cannot long be kept at 3,700,000 under current draft regulations.

► THE NATION'S armed forces cannot long be maintained under present laws and regulations at the current officially approved strength of 3,700,000, the Engineering Manpower Commission of the Engineers Joint Council declared in New York.

The nation will be faced with this fact when the bottom of the Selective Service manpower barrel is scraped before the end of the next six months, the commission pointed out.

The commission represents about 140,000 of the country's top engineers. Present at this special meeting of the commission to consider armed forces and technological manpower problems were Carey H. Brown of the Eastman Kodak Company, chairman of the commission, and engineers from some of the nation's largest corporations.

The commission called upon officials in Washington and the public to re-examine the entire question of the strength of our armed forces because, it said, future decisions in this regard will vitally affect our technological defense.

"No matter what size armed force we can derive from our population," the commission said in an exclusive statement to SCIENCE SERVICE, "it must be provided with offensive and defensive weapons which will enable the soldiers, sailors and airmen to achieve superiority over the greater numbers of the potential enemy. If the plain arithmetic of our manpower situation, and the significance it has for the strength of our armed forces, are not considered unemotionally, grave harm might be done to our technological superiority. To date, it seems to us, no adequate consideration has been given to these facts."

Commission Explains

The commission explained the arithmetic of the situation: "We are rapidly getting to the bottom of the barrel of 18½-to-26-year-old manpower pool, so far as the draft is concerned. Local draft boards all over the country will be hitting the bottom next January or February. From then on, Selective Service will have to depend on only those who become 18 each year. This, it happens, is only 1,100,000 every year and only 750,000, at the most, of those will be physically and mentally fit for service in the armed forces. Under present law they will be required to serve two years.

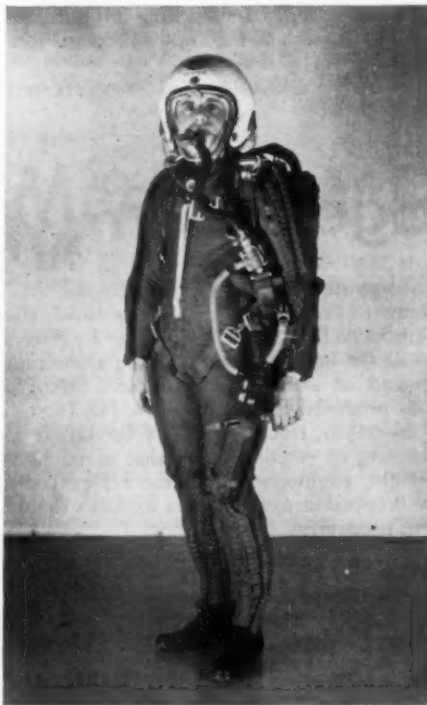
"An optimistic estimate of permanent, career armed forces personnel is 1,500,000. Obviously, 750,000 serving for two years will only provide another 1,500,000, not enough to bring the total up to 3,700,000, the present official goal. The discrepancy

has to be made up by those who enlist for longer terms, particularly in the Air Force and the Navy.

"The experience of Selective Service over the past two years shows that this is completely inadequate, as is demonstrated by the fact that the pool of men in the 18½-to-26-year age group available to Selective Service has dropped from 3,600,000 in June, 1950, to 1,076,000 in June, 1952. This is at a rate of more than 100,000 a month."

Supplementing its warning that calling upon those presently deferred will not solve the problem, except for a short time, the commission said:

"The Engineering Manpower Commission, with a policy of constructing a firm technological defense for our nation, is particularly concerned with those deferred for essential industry and to continue their training in college. This group amounts to 217,000: 184,000 students, 33,000 in essential industry.



EMERGENCY FLYING SUIT—The new United States high altitude pressure suit, the T-1, being tested by a pilot at the Aeromedical Laboratory, Wright Air Development Center, Dayton, Ohio, will enable pilots to survive in the near vacuum of the upper atmosphere.

"If all the physically fit in this group were drafted—less than 200,000—this would delay facing the basic problem for only three months," the commission pointed out. "Further, if this group were drafted, we would in the long run be destroying the ability of industry to produce the weapons needed for our defense; we would be making sure that, in the future, no new ideas would come out of our laboratories or our industrial workshops."

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CHEMISTRY

Devise New Method For Telling Fat in Milk

► A SIMPLE new method, using a detergent, for measuring the fat content of milk and cream was reported to the Milk Industry Foundation meeting in Chicago by a U. S. Department of Agriculture chemist.

The same equipment as for the usual Babcock test can be used, with the detergent substituting for the sulfuric acid of that test. The new method measures the fat content directly, rapidly and just as accurately as before.

Only two reagents are required. One is a water solution containing very small amounts of a nonionic detergent and a phosphate salt, and the other is 50% methyl alcohol. The new test was perfected by O. S. Sager, chemist at the Bureau of Dairy Industry, Washington.

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BIOLOGY

Amebas Have Red Tails, Expert Finds

► THE PIN-POINT of living jelly, the ameba, is neither as formless nor as directionless as scientists have thought it to be, Dr. R. J. Goldacre of London's Royal Cancer Hospital declares.

Studying the movement of the ameba, Dr. Goldacre has found it to have a tail, and a red tail at that.

The red pigmentation of the ameba Dr. Goldacre studied was diffusely distributed throughout the one-celled animal when it was resting, but as soon as it started to move all the pigment concentrated in a wrinkled rear area. There it stayed, making the identification of the tail possible.

When the ameba was made to move down a very narrow channel in which it could not execute a simple turn around, it would, on reaching the blank wall at the end of the channel, plant down a foot-like bit of its jelly and then execute a bit of acrobatics to swing its tail behind for its return journey. The red tail still brought up the rear.

This rear end of the ameba also seemed to be the initiation point for an electric current which then passed through the whole cell to give it impulse.

Dr. Goldacre commented that it was remarkable how the ameba's tail had so persistently been ignored by zoologists.

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GENETICS

Inherit TB Resistance

Gene for resistance to tuberculosis may be more dominant than the gene for susceptibility, experiments with inheritance of disease in rabbits show.

➤ **RESISTANCE** TO tuberculosis may be in part a matter of inheritance. If so, the resistance may come through a gene that is more dominant than the gene for susceptibility to the disease.

Studies suggesting this were reported by Dr. Max B. Lurie of the University of Pennsylvania's Henry Phipps Institute, Philadelphia, at a conference held by the National Tuberculosis Association in New York.

The findings, he said, are in harmony with the fact that the tuberculosis death rate started going down long before any hygienic measures were undertaken to fight the disease.

Dr. Lurie studied the inheritance of tuberculosis in inbred rabbit races. Some of them were highly resistant and others highly susceptible to TB. The animals inhaled human type tuberculosis germs. The method is a quantitative one, the number of primary tubercles developing in the rabbit lungs being inversely proportional to the animal's resistance. That is, the greater the resistance, the fewer are the tubercles that develop. The tubercles are the masses of small round nodules produced by the tuberculosis germs.

TECHNOLOGY

Aluminum Bridge Span

➤ **THE WHEELS** of American industry are grinding out a new aluminum fixed-type bridge for the Army that can span 180 feet of swirling waters or deep ravines.

Known as the T6, the bridge was designed primarily for use by Army divisions. But with a little reinforcement, it can support the tremendous weight of a full-dress army, which is composed of several divisions.

Many details still are cloaked in military security. However, it is known that a 75-foot length of the bridge can be thrown up by hand in about one-third the time required by a similar length of the Bailey bridge, the Army's stand-by during World War II.

Other short spans can be set in place by hand in less time than by machinery, even though the bridge was not designed specifically for hand erection.

Field trials of a test model showed, furthermore, that the new bridge can carry loads 50% heavier than similar bridges used in World War II.

The bridge is a product of five years' work conducted at Fort Belvoir, Va., by the Engineer Research and Development

The factors that determine native resistance to tuberculosis are "multiple, complex and additive in nature," these studies showed.

When rabbits of a highly resistant race were bred to rabbits of a highly susceptible race, the offspring's resistance was intermediate between that of each parent race.

Back-crossing some of these to resistant race ancestors resulted in a race with the same degree of high resistance as the original resistant race. Back-crossing the hybrids of the resistant-susceptible races to susceptible ancestors resulted in animals with significantly more resistance than that of the original susceptible ancestors.

That the spleen may have something to do with natural resistance to tuberculosis appears from studies reported by Drs. Walter Lyon Bloom and Martin Cummings of Emory University, Ga., and the Veterans Administration Hospital at Chamblee, Ga. Material from rat spleens, they have found, will stop TB germs in test tube experiments. At present they are working to find the chemical nature of the anti-tuberculosis substance in rat spleens.

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TECHNOLOGY

Gold-Coated Glass Gives A Super-Smooth Surface

➤ **GOLD-COATED GLASS** has produced a super-smooth surface needed by scientists to help them determine why various insulating materials break down under high voltages.

Stored under tight-fitting plastic covers, the surfaces form a part of special electrodes that General Electric Research Laboratory scientists say must stay absolutely

free of dust. One speck is enough to throw off the breakdown voltage of an insulating material by as much as 10,000 volts, they report.

Finding a super-smooth surface was a tough proposition for the scientists. They first tried hand-polishing stainless steel with a powder having granules only one-millionth of an inch in diameter. But the resulting surface was too rough.

Since liquids have smooth surfaces, they tried out mercury. But under the high voltages applied during the tests, the mercury distorted and threw off the breakdown voltage readings.

Glass lightly coated with vaporized gold produced what the scientists term the smoothest solid surface found so far. And even though the electrodes are stored under dust covers, they are carefully scrubbed with a camel's hair brush dipped in a detergent before each experiment is begun. During the experiment they are watched through a microscope to make certain they stay clean.

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BIOCHEMISTRY

Pituitary Removal Helps Prevention of Cancer

➤ **THE IMPORTANCE** of the pituitary gland, at the base of the brain, in cancer is given fresh emphasis in studies reported by Drs. Henry D. Moon, Miriam E. Simpson and Herbert M. Evans of the University of California in *Science* (Sept. 26).

Removing the pituitary gland, they found, protected rats from cancers that otherwise develop as a result of treatment with the chemical, methylcholanthrene.

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SMOOTH SURFACE — Housewife Louise Boyka dusts off, with her breath, one of the world's smoothest solid surfaces, made of finely-polished glass coated with vaporized gold and used for testing electric insulating materials.

TECHNOLOGY

Fire-Fighting Jeep

Self-contained, fire-extinguishing system is mounted on a jeep for speedy quenching of gasoline fires from plane crashes aboard Navy aircraft carriers.

► LIKE A spider rushing toward a trapped fly, the Navy's new fire-fighting jeep can dart up to burning plane wreckage on an aircraft carrier and swamp it in two minutes with 2,600 gallons of "bean soup." But whereas the spider is intent upon the kill, the two-man jeep crew is intent upon the rescue.

Unveiled in Washington before governmental and press representatives, the foam fire-fighting jeep is the latest product of a basic program carried on at the Naval Research Laboratory. The program is aimed at combatting one of the Navy's worst enemies—fire at sea.

When a plane crashes while attempting a landing on an aircraft carrier, the fire-fighting jeep springs into action. It can squirt a stream of foam 90 feet to the burning plane, or it can blanket the cockpit area with a protective cone of fire-killing foam 30 feet in diameter while rescue squads hasten to the trapped pilot.

"Bean soup," defined by a Navy lieutenant as "a frothy mass of gooey stuff that sticks all over everything," is made from air plus water and protein solutions carried in tanks built into the jeep. The foam is

mixed in a pump that whips the solution like an egg-beater, discharging the micro-bubbled foam from a nozzle mounted on the jeep's fender.

NRL scientists say the mobile fire extinguisher is so simple it can be operated by anyone "who can drive a jeep and pull a knob." Yet this effective gasoline- and oil-fire extinguisher can be built for about \$5,000, as compared to about \$30,000 for most airport crash fire trucks now being used, they estimate.

The jeep can squirt fire-fighting foam for two minutes before its foam-concentrate tanks are emptied. Then it can be connected directly to the ship's foam-piping system, drawing the fire-smothering chemicals from the ship's large storage tanks.

In mock tests in which 150 gallons of blazing gasoline were splashed over 600 square feet, "rescues" have been made within 24 seconds after the jeep went into action.

The fire-fighting jeep is entirely new to the Navy. It was designed and the test model was built at the Naval Research Laboratory.

Science News Letter, October 18, 1952



JET TARGET PLANE—The first illustration to be released, this artist's conception shows the Ryan Aeronautical Company's jet-propelled pilotless target plane, the Q-2, designed for anti-aircraft training and fighter plane interception problems.

TECHNOLOGY

Glass Paper, Tear-Proof Cloth Contained in Kit

► PAPER THAT will not burn, a thin coated fabric that is difficult to tear, layers of impregnated paper that are not marred by boiling water, and glass fibers used to increase the beauty of a plastic rather than add to its strength are the interesting items included in the latest THINGS of science unit issued by SCIENCE SERVICE.

All-glass paper, developed jointly by the Naval Research Laboratory and the National Bureau of Standards, is composed entirely of glass fibers. It has several important applications even though it lacks strength.

The paper seems particularly suited as the filter for gas masks and respirators. One use visualized is for filtering out radioactive dust in atomic energy installations. Like other glass products, it does not transmit electricity and so may prove valuable as an insulator.

Nylon cloth, woven of untwisted thread and coated with vinyl resin, is difficult to tear. The flat, ribbon-like thread makes a strong, thin fabric; the plastic coating helps it shed water. This new material has been found good for ponchos and raincoats, tents, covers and sails for life rafts, and truck tarpaulins.

Containing six specimens in all, the 1952 Fiberglass-Plastic Unit can be obtained for the nominal price of 75 cents, or three kits for \$1.50. Just write SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for it.

Science News Letter, October 18, 1952

PHYSICS

Machine-Made Aurora

► THE SHIFTING curtains of light that streak the polar skies have been made to glow artificially in the laboratory by an atom-smashing machine that bombards the air with alpha particles or with hydrogen atoms stripped of their electrons.

A. B. Meinel, assistant professor of astronomy of the University of Chicago, has reported to the Air Force Research Center that he and an associate, C. Y. Fan, had created a "striking reproduction" of the northern lights by using the kevatron, an atom-smasher at the University's Institute for Nuclear Studies.

The machine bombards the air with protons and with alpha particles, producing a greenish-blue light. Protons are stripped hydrogen atoms, and alpha particles are the nuclei of helium atoms.

Long a student of the aurora, Prof. Meinel explained that the polar lights are produced two ways. Much of it is created by the movement of air molecules in the upper atmosphere when struck by protons. The remainder is produced when the protons regain electrons.

In nature, protons are expelled from the sun. As they approach the earth at speeds of 7,500,000 miles an hour, they are trapped

in the earth's magnetic field and are swept toward the poles. There they collide at high altitudes with air molecules and create the dancing lights that brighten the long nights at the north and south poles.

Science News Letter, October 18, 1952

BIOPHYSICS

Reduce Cell Damage From Atomic Radiation

► ATOMIC RADIATION damage to the chromosomes in the nuclei of cells can be reduced by either of two chemicals, sodium hydrosulfite or 2,3 dimercaptopropanol, better known as BAL, short for British anti-lewisite.

This is true at least in the case of the chromosomes of onion roots immersed in certain concentrations of these solutions before and after irradiation with gamma rays.

Studies showing this were reported by Dr. H. P. Riley of Oak Ridge National Laboratory, Oak Ridge, Tenn., to the American Institute of Biological Sciences.

Science News Letter, October 18, 1952

MEDICINE

Seek Airsickness Remedy For Pilots, Navigators

► AN AIRSICKNESS remedy that will be safe and effective for pilots and navigators is now being tested at the Randolph Field Laboratories of the Air Force School of Aviation Medicine, San Antonio, Tex.

Passengers can get relief from air or seasickness through antihistamines, such as Benadryl and Dramamine, and scopolamine hydrobromide, the old "twilight sleep" drug for women in childbirth which has lately been used by police as a "truth serum."

These are, however, likely to cause drowsiness, which makes them unsafe for pilots and navigators. Mixing them with a stimulant seems to be the answer to the problem. At present, a mixture of scopolamine and Benadryl with dextroamphetamine, or Dexedrine, is considered promising, but the search for a perfect airsickness remedy continues.

The research is being carried on by Dr. Herman I. Chinn, head of the department of pharmacology and biophysics, and Maj. Robert B. Payne, head of the department of experimental psychology. As Dr. Chinn develops new remedies, Maj. Payne tests their effects on reflexes, judgment and intellectual functioning.

Science News Letter, October 18, 1952

AERONAUTICS

Seaplane in Come-Back With Gas-Turbine Engine

► THE FLYING BOAT is making a "come-back" in the aviation field. New types, recently developed and now under order, are so designed that they can use gas turbine engines to give them the speed of the modern land-based aircraft that put them in the background during the past few years.

Orders have been placed by the U.S. Navy with the Glenn L. Martin Company of Baltimore for a new jet-powered seaplane. No details of its concept and design have been released but high speed is one of its possibilities. This new flying boat will be known as the Martin Model 275 Sea-Master.

Another speedy flying boat, also under order by the Navy, is the R3Y, product of the Consolidated-Vultee Aircraft Corporation, San Diego, Calif. It is not of the ordinary jet-propelled type. Its propulsion is by turboprop, a gas turbine engine driving conventional propellers. This type of propulsion gives speeds less than the turbojet, but considerably greater than provided by conventional engines and propellers.

Actually, this R3Y is a cargo-transport version of the Convair YP5Y-1, a long-range patrol flying boat, which made its initial flight two years ago. Its power-plant consists of four 5,500-horsepower Allison gas-turbines, each engine consisting of two

units paired and driving contra-rotating airscrews through a common gear box. In a test flight, it made a world record for a turboprop plane, remaining in the air for a little over eight hours.

For either turbojet or turboprop propulsion, seaplanes must be longer and narrower than ordinary flying boats. Their elongated fuselage requires special design to withstand wave action when they are on the surface of the ocean. Also special "belly" design is essential so that they have stability on the waves and an easier takeoff than the familiar bulky flying boat.

Science News Letter, October 18, 1952

PUBLIC SAFETY

Hugging Wall May Be Fatal in A-Bomb Blast

► IN CASE of an A-bomb blast, it may be safer to stay out in the open and cover your head with some cushioning material than to try to hug a wall.

Dr. Benedict Cassen of the University of California at Los Angeles' Atomic Energy Project makes this recommendation. His research has shown that a greater number of blast casualties occur among mice that were constrained against a barrier than among those that were unconstrained.

Such casualties were primarily caused by lung edema (swelling), apparently induced by a brain injury from the impact of the head against the barrier. Shielding the chest of the mice from the direct slap of the blast had no significant effect upon the lung swelling, but shielding the head reduced it considerably.

"Under certain conditions a wall or obstacle will furnish protection if it is between the body and the blast," pointed out Dr. Cassen. "But there is no reliable way of knowing the direction of the blast beforehand. So you might be less likely to become a casualty if you use the short interval between flash and blast to cushion your head rather than throwing yourself against a wall."

Science News Letter, October 18, 1952

PHYSICS

Gamma Ray Generator For Total-Body Radiation

See Front Cover

► CAPT. R. H. DRAEGER, head of the atomic medical division of the Navy's Medical Research Institute, explains the working of the Navy's new gamma ray generator to Hospital Corpsman N. J. Marbois of Brooklyn, N. Y., in the picture on the front cover of this week's SCIENCE NEWS LETTER.

One hundred capsules, each containing approximately 12 curies of radioactive cobalt-60, are housed in the 60 tubes of the generator's pneumatic transfer tube system. The generator is built to allow complete, total-body irradiation. (See SNL, Oct. 4, p. 217.)

Science News Letter, October 18, 1952

IN SCIENCE

PUBLIC SAFETY

Doctors Advised to Give Do-Not-Drive Warning

► DOCTORS SHOULD warn some of their patients that it is dangerous for them to drive automobiles.

This advice to doctors comes from an editorial in the *Journal of the American Medical Association* (Oct. 4).

The don't-drive-an-automobile warning, says the medical journal, is for patients with advanced heart disease, hardening of the arteries, high blood pressure, gross deficiencies of vision, and disorders of the nervous system. Certain drugs, particularly sedatives and stimulants, may also make driving dangerous. Less apparent factors that may cause accidents are degenerative changes in the eyes, color vision disturbances and loss of depth perception.

"Another factor to be considered is the 'mental make-up,' 'constitutional behavior' or, as some irritated drivers would say, 'the sheer cussedness' of those who persist in driving on the wrong side of the road, straddling white lines and otherwise ignoring even the simplest safety directions," the medical journal states.

"One cannot but wonder at times what such drivers think about—if they think at all. Or, is the fault purely physical and not readily apparent without close examination?"

Science News Letter, October 18, 1952

PHYSIOLOGY

Thick and Thin Nerve Fibers Are Discovered

► TWO TYPES of sensory nerve fibers exist—the thick type and the thin type—and each has a highly specialized function.

This is what research at the University of California at Los Angeles has indicated. It was performed by Dr. Y. Katsuki, visiting physiologist from Tokyo Dental-Medical University, and Dr. Theodore Bullock, professor of zoology.

The thick type of sensory nerve fiber is extremely discriminating as to the types of impulses it picks up. It gets tired easily and may cease to function temporarily.

The thin fiber, on the other hand, is a steady and tireless performer. It is the more sensitive of the two, detecting the least change in the degree of such sensations as pain and pressure.

Study of these fibers involves a very delicate technique of micro-surgery. Nerves consist of a cable-like structure of many fibers. Dr. Katsuki is one of the few people in the world who can whittle nerve cables down to submicroscopic single fibers.

Science News Letter, October 18, 1952

SCIENCE FIELDS

PHYSICS

H-Bomb Element Used In Light Standard

► THE PRINCIPAL ingredient of the hydrogen bomb is now being used to make a light source that is almost constant, useful for standardizing phototubes and other optical instruments.

Tritium, the triple weight hydrogen, is believed to be essential to the H-bomb which probably will be tested this fall.

Dr. Irving A. Bernstein and Earle Farmer, of Tracerlab, Boston, have incorporated radioactive tritium, made in the Oak Ridge atomic reactor, into stilbene. Tritium's beta rays, or electrons, given off constantly, cause the carbon-hydrogen compound to fluoresce. This light is something like that given off by radium-activated substances, but without danger to health.

Light from the tritiated stilbene is strongest in a region of the spectrum where the eye is least sensitive but where phototubes are most sensitive.

Self-luminescent materials more visible to the eye are in development to replace radium on watch dials, luminous markers and other such uses.

Science News Letter, October 18, 1952

TECHNOLOGY

Tiny Glass Balloons in Construction Material

► TINY GLASS balloons, about the size of grains of sand, are the basis of a new construction material to be used as a light-weight aggregate in concrete and plaster in place of ordinary sand or other fillers.

This new material, made by blowing up individual grains of clay in a special furnace, was developed at the Armour Research Foundation of the Illinois Institute of Technology in Chicago, under a project sponsored by the Kanium Corporation of the same city. It will be known as "Kanamite."

Concrete mixes using the new material in place of sand or other aggregates are very fluid, even though their water content is low, John Neff of the Foundation staff stated. This fluidity means that for the first time in building history, contractors can fill forms with concrete pumped through rubber hose. Construction costs can be lowered because of the virtual replacement of shovels and awkward metal hose now used.

Concrete, mortar and plaster made with the material have proved to be strong and light. They also have good insulating properties, he declared. The new aggregate permits thinner coatings of plaster to be used on inside walls, and also the manufac-

ture of thinner, lighter plaster board with strength equal to present types.

The process of making the glass-balloon material involves the feeding into the top of a vertical furnace ground and screened particles of clay. The individual grains of the raw material melt in the approximately 2,700 degrees Fahrenheit furnace temperature as they fall through a gas-air flame. Gases given off by the tiny melted blobs inflate them into hollow spheres. The spheres are collected at the bottom of the furnace.

Science News Letter, October 18, 1952

MEDICINE

Six Out of 10 Angina Patients Live Five Years

► A STUDY of 6,882 patients with the kind of heart disease called angina pectoris, associated with coronary sclerosis, shows that 58.4% of them survived five years, compared to the rate of 86.9% for the normal population.

The study, made on patients whose records go back at least five years and in some cases 23 years, is reported by Drs. William J. Block, Jr., Edgar L. Crumpacker and Thomas J. Dry and Robert P. Gage, statistician, of the Mayo Clinic and Foundation in the *Journal of the American Medical Association* (Sept. 27).

Said to be the longest and largest ever undertaken, the study showed that mortality was greatest in the first year after the heart attack, being 15% then and about 9% per year thereafter.

Patients who were very fat, or obese, as well as having angina pectoris, "interestingly enough" had the best prognosis in five-year survivals. Since this contradicts other observations, the Mayo group plans to investigate this point further.

Science News Letter, October 18, 1952

PHYSIOLOGY

Blowing Whistle Helps Children in Operation

► "BLOW THE whistle" can now replace the "Breathe deeply" command when small children are given an anesthetic before operations.

A whistle that fits into the exhalation side of a circle-absorption gas anesthetic machine has been devised by Roy Anderson of the Ohio Chemical and Surgical Equipment Company and is now in use at the Mayo Clinic, Rochester, Minn., Dr. Thomas H. Seldon of the section of anesthesiology reports.

No sound is made during inhalation, but the harder the youngster works to expire air through the machine, the higher is the note of the whistle. After a demonstration of how the whistle works, children become interested and, instead of struggling, fall asleep while blowing the whistle. Once the patient has lost consciousness, the whistle can be silenced by a plastic cap.

Science News Letter, October 18, 1952

PHYSIOLOGY

Death From Fright Possible but Rare

► IT IS possible really to be scared to death although death from fright is rare, Drs. W. Proctor Harvey of Washington and Samuel A. Levine of Boston declare in a report to the *Journal of the American Medical Association* (Oct. 4).

They explain the probable mechanism of death from fright briefly as follows:

A nervous pathway from the hypothalamus at the base of the brain, often called the seat of the emotions, to the heart has been shown in animals. Presumably this also exists in humans. Severe fright, as is well known, can make the heart beat very fast. If the fright is bad enough, this palpitation could turn into the rapid, disorganized heart beat, called ventricular fibrillation, that may end in death.

"Voodoo" death or "hexing" to death might follow the same general mechanism, it is suggested, although the process would be more gradual.

Science News Letter, October 18, 1952

CHEMISTRY

Industrial Explosives Big Business in the U. S.

► THERE IS a lot more "bang" in industry in the United States than is generally appreciated: over 700,000,000 pounds of explosives are manufactured each year to supply the "bang."

Armies consume great quantities of explosives in wartime, but industry employs them at all times. Meeting this industrial demand is the big part of the work of the chemical manufacturers who turn out explosives from gunpowder to trinitrotoluene.

Each year the use of industrial explosives seems to be increasing. During 1951, a total of 753,820,583 pounds were consumed, according to the U. S. Bureau of Mines, a 5% increase over 1950.

About 39% of the total goes for coal mining operations, while other types of mining use a very large percentage.

A considerable portion of industrial explosives is used for construction work and for other activities, from ditch digging to stump removal. Metal mining and quarrying and non-metal mineral mining, each take about one-fifth the explosives produced. Railway construction is a heavy user, but wherever earth and rock must be removed, blasting makes the handling easier.

The Bureau of Mines, after long testing with various explosives, urges the coal industry to use types designated by it as "permissible," because they provide less hazard. However, in 1951, approximately 52% of the high explosives used in coal mining was not of this type. Approximately 37% was of the permissible type, 4% was black blasting powder and about 7% was liquid oxygen explosives.

Science News Letter, October 18, 1952

PUBLIC HEALTH

Chef Founds Canning Industry

Although victorious in war, France was losing its battle with disease. An obscure chef won the 12,000-franc prize offered for finding a way to keep food fresh a long time.

By ALLEN LONG

► WHEN THE housewife snatches her can opener from its place and prepares to fix a meal, she is using a remarkable tool. For the can opener has opened far more than cans. It literally has opened new lives for thousands of soldiers and sailors who, without canned foods years ago, might otherwise have died of scurvy, a disease as formidable as the enemy.

It also might be said that the can opener is a sort of time machine. With a whirl of a handle, the can opener adds or subtracts months from the calendar, giving the housewife foods that are scarce at the time she is fixing the meal.

But without the can, its opener would be useless. And without Napoleon Bonaparte, a French chef named Nicolas Appert and a 12,000-franc prize, the new bride who never learned to cook might pass through a longer period of culinary embarrassment.

It all began in 1795 when France was fighting desperately in Europe. Although France conquered her enemy, she suffered heavy losses of troops due to scurvy and other diseases. Soldiers and sailors ate salted meat and bread, but something was wrong with the diet. Fresh food seemed to be the answer.

The French governing body offered a 12,000-franc prize to the citizen who could find a way to keep food fresh over long periods of time.

Nicolas Appert, an obscure confectioner and chef, tackled the problem. Currently, the vast multi-billion dollar canning industry is celebrating the 200th anniversary of their founder's birth, Oct. 23, 1752.

No Scientific Training

Appert had no scientific training to help him find a way to preserve food. And even if he had, it probably would not have helped him. Little was known of bacteriology in those days. He found out how to can foods long before Louis Pasteur was able to explain why the method worked.

After studying the problem 14 years, Appert came up with the theory that if food were sufficiently heated and then sealed in an airtight container, it stays edible.

He canned his first successful foods in glass bottles and in jars with wide mouths. The bottles were filled and then sealed with hand-cut corks. Wire tied the corks in place. Then the jars were put in boiling water and the food was cooked.

Samples of Appert's canning were placed aboard ships and were sent around the world. When opened after the ships had returned, the food was still good. Emperor Napoleon Bonaparte personally awarded the 12,000-franc prize to Appert.

The canning business caught on quickly in Europe. An Englishman, Peter Durand, patented a tin-plated iron canister which was a crude form of the tin can as it is known today. Bryan Donkin and John Hall used those cans to preserve food by Appert's method.

Actually the tin can was too sturdy. The dainty housewife had to exert brute force with hammer and chisel to open one. It was almost like cracking a safe.

Meanwhile, Englishmen were packing their bags and heading for the fast-growing United States. William Underwood, one of these men, landed in New Orleans. He was unsuccessful in getting any local backing for a canning operation there. He headed north with his idea, walking because of his empty wallet.

About 1,400 miles and many disappoint-

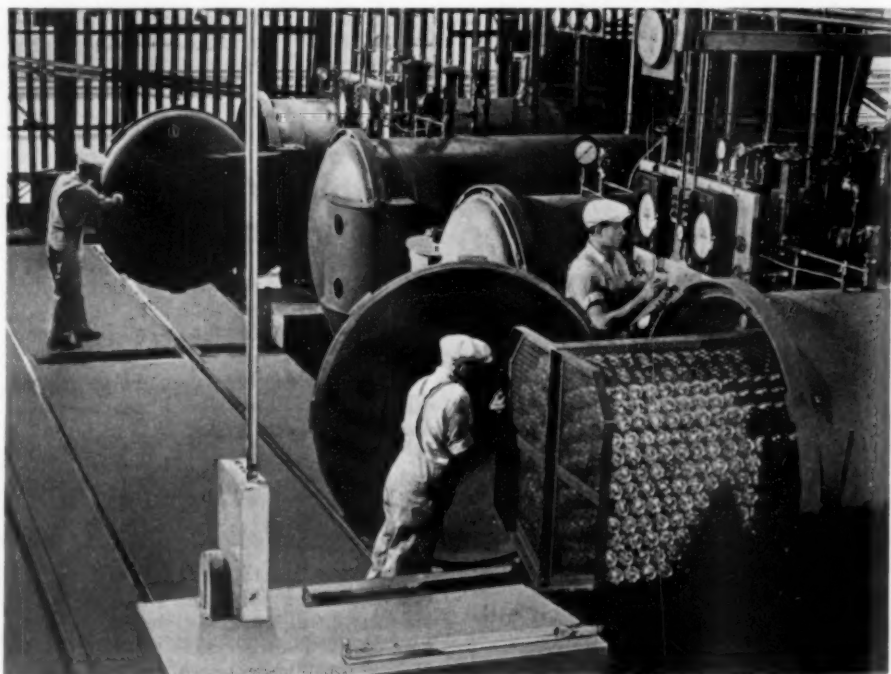
ments later, he arrived in Boston and finally was able to establish a small cannery where he packed fruits, pickles and relishes in bottles. Most of his product was sold in South America and in the Far East. Americans had not accepted canned foods at that time.

Other persons interested in the canning business began spotting canneries here and there across the country. Inventors went to work and produced newer and better tin-plated cans. By 1856, the United States had canned milk.

Important During Civil War

The Civil War revealed dramatically for the first time in America just how important canned food was. Armies were fed from the can, and as discharged soldiers returned to their homes, they spread the word about the foods they had eaten. Soon the public began accepting canned foods and the canneries upped their business about six times.

From that point on, the canning business leaped ahead with great strides due to American ingenuity and resourcefulness. The pressure cooker which cut food processing time was invented. Automatic machines began scraping salmon, husking corn, peeling tomatoes, and even picking



CANNERY COOKING OPERATION—Workmen here are loading big pressure cookers, called retorts, with hermetically sealed cans of food that will be cooked according to scientifically developed techniques, then cooled quickly to prevent over-cooking.

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FATHER OF CANNING INDUSTRY—Because of his discovery of the canning principle, Nicolas Appert, whom Napoleon presented with a 12,000-franc prize, has been called the "benefactor of mankind."

peas without removing the pods from the vine. Conveyors began carrying the product through canneries then operating on an assembly line basis.

Soon meats were canned in Chicago, shrimp in New Orleans, sardines in Maine, salmon in Alaska and pineapples in Hawaii.

Today's modern housewife can buy almost anything in cans from A to Y—from abalone, a sea food, to youngberry juice. Included among available canned products are bamboo shoots, a Chinese dinner, dandelion greens, water chestnuts, and even ham and eggs.

Employs Half a Million

From Nicolas Appert's initial discovery has sprung an industry which in the United States alone provides work for half a million persons and which benefits millions more. The Encyclopedia Britannica says: "The method of preserving food in tins or other containers is probably defensible as the greatest of all inventions in historic times."

It is no wonder that Napoleon personally presented Appert with the 12,000-franc prize.

Through the years, the canning business has sought to maintain a high-quality product. To do that, it has had to have high-quality food from the farmer.

Harvesting Services Provided

Research work sponsored by the canning industry has helped bring about improved flavors and appearances of fruits and vegetables, new types of hybrid sweet corn, the stringless bean, solid red beets (instead of beets having alternate bands of red and white), and several new cling peaches that combine deep flesh and small pit with an appealing color and flavor.

Canners have helped educate farmers to the task of proper fertilization and harvesting techniques. Canners' field men frequently give advice on the selection and planting of seeds, and the fungicides and insecticides to use during the growing season. Sometimes they even show farmers how to operate new mechanical harvesters.

Because many small growers cannot afford to own and operate harvesters, power sprayers and dusters, many canners provide those services at cost to help the growers produce better foods for the canneries.

Research Saves Scarce Tin

In addition to research aimed at better foods, the industry also seeks to find better techniques for itself. Today's tin can is a far cry from the rugged container of the early 1800's. It now is made of sheet steel coated with just enough tin to keep the canning juices and the atmosphere from attacking the steel. Further research points to a possible saving of scarce tin if the outside of the can is coated with less tin than the inside.

Even atomic energy may enter the canning business. "Cold sterilization" of foods by various forms of radiation, including that from atomic fission products, possibly could become a canning industry procedure. Research workers are studying that possibility.

Science News Letter, October 18, 1952

Nine separate islands in Rio de Janeiro's Guanabara Bay are being joined with filled-in earth; the project will result in "University City," a proposed school that can enroll 10,000 students.

YOUR HAIR

Its Health, Beauty and Growth

By Herman Goodman, M.D.

A medical specialist tells you what to do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, as: Dandruff—gray hair—thinning hair—care of the scalp—baldness—abnormal types of hair—excessive oiliness—brittle dryness—hair falling out—infection—parasites—hair hygiene—glands—diet—coloring—and myriad other subjects concerning hair.

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PSYCHIATRY

Much Interest, No Money For Psychiatric Research

➤ JUST ABOUT everyone in this country is interested in psychiatry, but almost no one is willing to dig down into his pocket to support psychiatric research.

As a result, "research in psychiatry is starving to death," Dr. Lawrence S. Kubie of Yale University School of Medicine and the New York Psychoanalytic Institute charges in a report to the American Association for the Advancement of Science in Washington.

Dr. Kubie gives figures showing that psychiatric research is way behind other medical research in funds, space and personnel. Referring to these, he says:

"When we look at our figures we need no longer feel surprise that, in spite of all the popular talk about psychiatry, not one of the psychiatric discoveries of the past 50 years was made in this country."

The costs of clinical care for psychiatric research, he estimates, should be \$100 to \$200 per bed per day, instead of the present "paltry" \$20 to \$30. Of the \$100 to \$200, three-fourths should go for research personnel and research activities.

Science News Letter, October 18, 1952

ANOTHER LANGUAGE

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BIOLOGY TEACHERS: HAVE YOU TRIED INSECTS?

Many insect tissues are as representative as are those of mammals, and have the additional advantage of being unusually clear. Among the many we have prepared, we list the following:

1. Spermatogenesis,
2. Oogenesis,
3. Salivary gland,
4. Digestive mucosa,
5. Striated muscle,
6. Malpighian tube,
7. Single neuron,
8. Fat body, etc.

THE AGERSBORG BIOLOGICAL LABORATORY
Centralia, Illinois

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. books in print, send a remittance to cover retail price (postage will be paid in U. S.) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AGE IS NO BARRIER—Thomas C. Desmond, Chairman—*New York State Joint Legislative Committee on Problems of the Aging*, 171 p., illus., paper, free upon request to publisher, 94 Broadway, Newburgh, N. Y. An increasing proportion of our population are over 60 years of age. This series of reports cover many of the problems of employment, medical care, housing and so on.

THE COMMON AND SYSTEMATIC NOMENCLATURE OF THE SIMPLER ORGANIC COMPOUNDS—Fred Semeniuk—*School of Pharmacy, University of North Carolina*, 55 p., paper, \$1.25. Reference material for the review of advanced students and to provide beginners with material for organized study of the names of compounds, etc.

THE ENTERTAINMENT FILM FOR JUVENILE AUDIENCES—Henri Storck—*UNESCO (Columbia University Press)*, 240 p., paper, \$1.25. Discussing what themes, scenes and techniques are unsuitable for children because they over-excite, are misunderstood, or fail to interest the young audience.

ERRORS OF PSYCHOTHERAPY—Sebastian de Grazia—*Doubleday*, 288 p., \$3.00. A philosophical work emphasizing the importance of religion and morality to the mental health of the nation and the world.

EVERYDAY PHYSICS—Ole A. Nelson and John G. Winans—*Ginn*, 614 p., illus., \$4.36. This book, which describes a wide variety of applications of physics in the home and in daily life, is intended as a high school text, but will be useful as a reference book in the home. An abundance of attractive illustrations increases its usefulness.

Will you RETIRE YOUNG ENOUGH to enjoy it?

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FERROMAGNETISM AND THE CURIE POINT—B. M. Aldrich—*Oklahoma Engineering Experiment Station*, 44 p., illus., paper, free upon request to publisher, Oklahoma A & M College, Stillwater, Okla. This bulletin was prepared in response to a need to review present theories of magnetism in the light of recent research results with the aim of developing a new theory.

GEOGRAPHY OF LIVING THINGS—M. S. Anderson—*Philosophical Library*, 202 p., \$2.75. A book on "biogeography" treating of links between physical geography and economic or historical geography.

IMPROVING UNDERGRADUATE INSTRUCTION IN PSYCHOLOGY—Claude E. Buxton and others—*Macmillan*, 60 p., \$1.25. The report of a study group supported by the Carnegie Corporation and the Grant Foundation.

MENTAL PRODIGES: An Enquiry into the Faculties of Arithmetical, Chess and Musical Prodiges, Famous Memorizers, Precocious Children and the Like, with Numerous Examples of "Lightning" Calculations and Mental Magic—Fred Barlow—*Philosophical Library*, 256 p., \$4.75. An English author gives us a roundup of information on well known "geniuses" of one sort or another.

THE ORIGINS OF LOVE AND HATE—Ian D. Suttie with introduction by Ashley Montagu—*Julian*, 275 p., \$4.00. Making available to American readers this book first published in England in 1935. The author disagrees with Freud by holding that it is love, not sex, that provides the key to understanding human minds.

PROCEEDINGS OF THE FIRST OHIO WATER CLINIC 1952—Carl G. Paulsen and others—*Engineering Experiment Station, Ohio State University*, 154 p., illus., paper, \$1.00. A number of specialists discuss various aspects of the water problem of the state.

ROCKS, RIVERS & THE CHANGING EARTH: A First Book About Geology—Herman Schneider and Nina Schneider—*W. R. Scott*, 181 p., illus., \$3.00. The story of the earth, the author tells us, is in a leaf and in a stone; in a cloud and in the sea. This book for children will help them to understand the world they live in.

SHOCK AND CIRCULATORY HOMEOSTASIS—Harold D. Green, Ed.—*Josiah Macy Jr. Foundation*, 245 p., \$3.50. The papers contributed by specialists in various fields to a conference on this problem, together with the discussion with which they were greeted.

THE SHOVEL-NOSED SNAKE, CHIONACTIS, WITH DESCRIPTIONS OF TWO NEW SUBSPECIES—Laurence M. Klauber—*Zoological Society of San Diego*, 56 p., illus., paper, 85 cents. Report on a genus formerly thought to be rare, but now found to be quite common due to the new method of collecting them by shining car lights along paved desert roads at night.

TAXONOMIC STUDIES OF THE RATTLESNAKES OF MAINLAND MEXICO—Laurence M. Klauber—*Zoological Society of San Diego, Bulletin No.* 26, 126 p., illus., paper, \$2.00.

TEXTBOOK OF QUANTITATIVE INORGANIC ANALYSIS—I. M. Kolthoff and E. B. Sandell—*Macmillan*, 3d ed., 759 p., illus., \$6.50. The aims and plan of the first edition have been adhered to in spite of recent development of instrumental methods. It is the belief of the authors that the classical methods are still essential knowledge.

THANKS TO TREES: The Story of Their Use and Conservation—Irma E. Webber—*Scott*, 60 p., illus., \$2.00. A book for children explaining how trees grow and what they contribute to our comfort and happiness.

THEORY OF NUMBERS—B. M. Stewart—*Macmillan*, 261 p., illus., \$5.50. A textbook planned for a mixed group of beginning and graduate students. Footnotes indicate to the student whether any particular chapter is basic or may safely be skipped.

VISUAL AIDS IN FUNDAMENTAL EDUCATION: Some Personal Experiences—Alexander Shaw and others—*UNESCO (Columbia University Press)*, 168 p., illus., paper, \$1.75. Adventures of UNESCO workers in using movies and slide films to teach and to help people make their life better.

THE YUGOSLAVS: The History of the Yugoslavs and Their States to the Creation of Yugoslavia—Z. Kostelski—*Philosophical Library*, 498 p., illus., \$4.75. This nation, communized yet clinging to independence from Russia, has especial interest to Americans.

Science News Letter, October 18, 1952

METEOROLOGY

More Smoke From Homes Than Factories

► SMOKE FROM the chimneys of individual dwellings and small apartment houses often does more to pollute the neighborhood atmosphere than the smoke from the factory stacks in cities where coal-burning furnaces are widely used.

This is in spite of popular belief to the contrary. Smoke from factory stacks is denser and more concentrated than that from ordinary dwellings, and therefore more visible. But the total discharged may be much less than the output of the many private houses in the region.

This is the opinion of Dr. Walter C. McCrone of the Armour Research Foundation of Illinois Institute of Technology, Chicago, concerning the air pollution problem.

Science News Letter, October 18, 1952

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the reactor, isotope separation, visit biological and electro-technical laboratories, Norris Dam and the power station.

The National Science Fair is conducted by Science Clubs of America, a Science Service activity. Financial support for the fair program is given by newspapers, civic and industrial organizations, educational institutions and foundations, all cooperating to stimulate student interest in the expanding horizons of science.



Finalists of the Third National Science Fair, Washington, D. C., May 8-10, 1952.

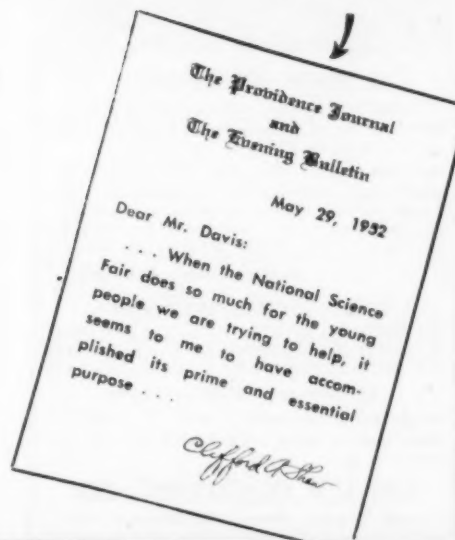
Excerpt from letter of Clifford Shaw, Promotion Manager of the Providence Journal-Bulletin, to Watson Davis, Director of Science Service.

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Questions

BIOLOGY—What color are amebas' tails? p. 245.

...

BIOPHYSICS—How can cell damage from atomic radiation be reduced? p. 247.

...

CHEMISTRY—What is a new method for telling the amount of fat in milk? p. 245.
How much "bang" is there in industry in the United States? p. 249.

...

GENERAL SCIENCE—Why is the present draft inadequate? p. 245.

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METEOROLOGY—For how long is it hoped to make low ceiling forecasts over an airport hold good? p. 244.

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PHYSIOLOGY—What two kinds of sensory nerve fibers exist? p. 248.
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PUBLIC HEALTH—In what way can the can opener be considered a time machine? p. 250.

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Photographs: Cover, U. S. Navy; p. 243, Chicago Natural History Museum; p. 245, U. S. Air Force; p. 246, General Electric Company; p. 247, Ryan Aeronautical Company; pp. 250 and 251, Ankers; p. 256, Tennessee Eastman Company.

MEDICINE

Hormones Tried in Leprosy

► **CORTISONE AND ACTH**, hormones useful in arthritis and many other conditions, may prove helpful in overcoming two complications of leprosy, or Hansen's disease, Dr. John Lowe, specialist of the Nigeria Leprosy Service, reports to the *British Medical Journal* (Oct. 4).

The two complications are: 1. sulfone sensitivity with drug fever, and skin and liver inflammation; 2. acute and subacute leprosy eye inflammation in which the local use of cortisone appears to be effective and safe.

Apart from these conditions, the use of hormone treatment of leprosy is usually not good because of the danger of aggravating the underlying condition and even the symptoms it is given to relieve.

"The early results are good and the late results too often bad," Dr. Lowe states, pointing out that this is similar to the situation in tuberculosis.

Sulfone sensitivity, one of the two complications he finds helped by cortisone or

ACTH, is "the one real danger associated with sulfone treatment." For this reason, the good results with cortisone are considered "of great practical value."

Sulfone chemicals are now being widely used in treatment of leprosy, and with good results. But some patients become allergic to the chemical after a few weeks, just as some become allergic to sulfa drugs. In Nigeria, about two percent of leprosy patients become sensitive, or allergic, to sulfones. The patient becomes seriously ill and may die, particularly if treatment is being carried out by "inexperienced medical staff." Even with good treatment, it has heretofore taken several weeks for the patient to recover. But with cortisone or ACTH treatment, patients recovered within a week.

If the hormone treatment can be started within 24 to 48 hours of the start of drug sensitivity, Dr. Lowe thinks this complication could be made harmless.

Science News Letter, October 18, 1952

PUBLIC HEALTH

Good Care for Hands

► **WITH THE** autumn season well under way, most women turn their thoughts to getting their skin and hair in condition after the week-ends of sun, wind and, perhaps, salt water.

Men should also be giving some thought and time to the condition of their skin. Hands that labor need care to keep them fit, and that care includes care of the skin.

Clean hands that have been washed frequently during the day are signs of a smart man or woman—one too smart to be laid up with painful, disabling skin trouble or an infection from germs carried to mouth or nose or eyes from dirty hands.

Remember that the skin is part of the body's armor against disease. Cut, cracked, roughened skin may open the door to dangerous germs. The irritation that can come from grease, oil, cutting oils and other industrial chemicals is not only bad itself but may lead to infection of the skin as well.

The best preventive for skin inflammation is cleanliness, industrial physicians say. And doctors agree that cleanliness is a fundamental for a healthy skin and essential for an attractive one.

A shower morning and evening is not enough to insure the kind of personal cleanliness that workers in some industries need for protecting their skin. Frequent washing of the hands, arms and face and neck, if they get grease and oils on them, is needed. This removes the irritating substances from the skin often enough to keep them from having time to cause irritation.

Clean work clothes every day are important for the same reason. Another trick

that helps prevent skin trouble from cutting oils is to keep the machine a man works on clean, so he won't get too much oil on his hands in the first place.

Gasoline and other solvents, and harsh alkaline and abrasive soaps should not be used to get the oil and grease off, because they may be irritating to the skin, especially the thin, dry skin of older workers.

Plenty of mild soap and water used often is preferred by industrial skin specialists. In many plants soap suitable for cleaning without harming skin is furnished.

Science News Letter, October 18, 1952

Muscles account for nearly half of man's body weight.

High-powered chemicals that rid fields of insects, fungus and weeds sometimes upset nature's balance, allowing mites to multiply.



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OPHTHALMOLOGY

Inability to Read

When children show dread or hate of school, parents should investigate the youngster's reading ability. Problems should be diagnosed and treated early.

➤ **MANY** A youngster dreads going to school because of inability to read. The condition is medically termed dyslexia.

It is a real condition that can build up enough anxiety and tension to cause before-school headaches and sick stomachs. So if Johnny or Mary shows such symptoms, or shows obvious dread and hate of school, parents should look carefully into his reading ability or inability. From 4% to 12% of older school children have some inability to read.

This advice comes from Dr. R. Swartout of El Monte, Calif. In a report to GP, published by the American Academy of General Practice, he points out that few parents can realize the tremendous tension and feelings of insecurity that a sensitive child has when confronted with a school day during which he is expected to do the impossible.

The abnormal factors which interfere with the ability to read are particularly easy to observe, easy to prevent and easy to correct, Dr. Swartout says.

Some of the fundamental physical causes are low intelligence, bad hearing, poor vision, and strephosymbolia or mixed symbols, such as mistaking an "n" for a "u."

In stressing the importance of strephosymbolia, the California doctor points out that 12.5% of the population are ambidextrous and it is in this group that mixed symbols are likely to develop.

"In the public schools of California where many teachers use the 'flash method' to teach reading, this type of dyslexia (strephosymbolia) is far more frequent than in private schools where instruction is highly individualized," he states.

He stresses that it is imperative to have the reading problems of these children diagnosed and treated as early as possible. The approach to the problem is threefold:

1. A correct diagnosis by the family physician.

2. The envelopment of the child in loving individual attention.

3. The de-emphasis of school and reading with concentration in another field where the child has skills.

Science News Letter, October 18, 1952

TECHNOLOGY

Chromium-Glass Coat Protects Molybdenum

➤ **LONGER LIFE** for jet engines is promised with a new chromium-glass coating for the hard-to-melt molybdenum metal used in the engines. The coating was developed by the National Bureau of Standards.

The melting point of molybdenum is 4,750 degrees Fahrenheit, but it oxidizes and deteriorates rapidly at high heats unless protected. The new coating is composed of chromium, and a glass in the form known as frit.

Because of its high melting point, molybdenum is the logical metal to withstand the high temperatures developed in the jet engine. It is relatively plentiful and America has an abundant domestic supply. It is already in use in jet engines, but wider applications will be possible with the new coating.

In tests conducted at the Bureau by D. G. Moore and associates, various chromium-frit coatings were bonded to molybdenum specimens, then subjected to oxidation under tension in the range of 1,500 to 1,800 degrees Fahrenheit and to flame tests in the range from 2,000 to 3,000 degrees. In the lower range, they lasted for 1,000 to 3,000 hours. In the flame tests, they lasted as much as seven hours.

Science News Letter, October 18, 1952

Do You Know?

The *rocket* was used as a military weapon as far back as 3,000 B.C.

A leaky *faucet* dripping once each second may waste 700 gallons of water in a year's time.

Using insecticides on cattle insects often increases *beef* production half a pound a day, and milk by 10% to 15%.

A one-pound *motor*, capable of responding to more than 100 signals a second, has been developed to move control surfaces on supersonic aircraft.

A symbol of *forest fire* prevention, "Smokey Bear" first was publicized in 1945; since then, forest fires have been reduced by 90% of their prewar level.

The *heat* given off in an hour by 30 healthy children in a school room is enough to raise about seven gallons of water from freezing to its boiling point.

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❁ **OUTDOOR THERMOSTAT** works hand-in-glove with stoker thermostat indoors to provide automatically more heat in houses when outside temperatures drop. The outside thermostat helps to offset the chilling effect of cold walls that make persons working near them feel colder, even though the indoor temperature has not changed.

Science News Letter, October 18, 1952

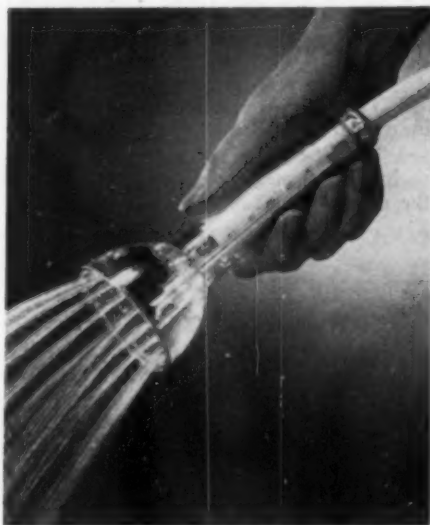
❁ **PERFUMED PLASTIC** is used in shower and window curtains to give the fragrance of a flower garden. Available in a variety of colors, the curtains' perfume is not sprayed on but is an integral part of the fabric.

Science News Letter, October 18, 1952

❁ **CHROME-PROTECTING FLUID** reduces corrosion on automobile trimming, particularly chrome trim on late-model cars that has little or no nickel mixed in due to current restrictions. Complete with dauber, the liquid dries in 12 minutes, cures completely in 48 hours and should form a coating good for six months.

Science News Letter, October 18, 1952

❁ **BATH SPRAY HEAD** made of a clear plastic has a built-in thermometer that shows the temperature of the water, as shown in the photograph. Especially useful



in bathing babies, the device clamps to the end of a small rubber hose and stands up under heavy knocks without shattering or chipping.

Science News Letter, October 18, 1952

❁ **"SNORKEL" FOUNTAIN PEN** with tube that can be plunged into ink is filled without wetting the pen point. After filling, the Snorkel tube is drawn back under the pen's nib. Because of its new design,

"leaks" that often are due to decreased air pressures during airplane trips, or to increased temperatures inside the pen while it is being used are avoided.

Science News Letter, October 18, 1952

❁ **WARMER PLATE** for laboratories and hospitals keeps solutions at desired temperatures for evaporation. Thermostatically controlled, the plate generates surface heats that can be regulated up to 212 degrees Fahrenheit. It has a built-in thermometer and a metal cover that shields its 24-by-6 1/2-inch surface when not in use.

Science News Letter, October 18, 1952

❁ **INDUSTRIAL VACUUM CLEANER**, especially good for cleaning hard-to-reach places in airplanes, has a main tube only one inch in diameter. Made of stainless steel, the tube is beaded so that a bag can be attached to catch flying rivets and metal. A male disconnect fitting allows the cleaner to work from standard air lines.

Science News Letter, October 18, 1952

❁ **TINY GRINDING WHEEL** is only 1/16 of an inch in diameter and is mounted on a steel shank. Sometimes called an "abrasive point," the wheel can be used for grinding extremely small holes in metal or for polishing precision parts.

Science News Letter, October 18, 1952

• Nature Ramblings •

► **"HALCYON DAYS"** is an expression we are very likely to hear about now, whenever a spell of calm, warm, "Indian summer" days makes us forget for a while summer storms that are past and winter weather that is still to come. Most of us do not stop to think of its origin.

The phrase dates back to a belief of the ancient Greeks that during calm, bright days that sometimes intervene in the midst of the Mediterranean winter, a bird called the halcyon, usually identified as the kingfisher, made a floating nest on the quiet waters and there reared its young.

The word "halcyon" itself is a combination of two Greek roots meaning "seaborn." Many old-time superstitions have survived into our time, but this one has died out completely, leaving only its name as a literary tag.

There is reason enough for supposing that the kingfisher actually was the halcyon of the ancient Greeks. It is of necessity a

Halcyon Days



water-side dweller, and thus would have been familiar to sailors and especially to fishermen. The latter may well have admired its skill at their own craft.

It is quite unlikely that the Greeks, who were on the whole not very observant naturalists, would have noticed the kingfisher's habit of occasionally vanishing into a hole in an earthen bank or bluff, so that the

whereabouts of its nest remained a mystery. Where facts do not presently come to hand to explain a mystery, a superstition is very likely to take their place. Hence the story of the floating nest.

There was another superstition about the kingfisher that apparently survived at least into the Renaissance. Sailors believed that a reliable wind-vane could be made by hanging up a dead kingfisher by the neck; its long beak was supposed to point steadily into the wind.

Marlowe, a contemporary of Shakespeare, alludes to this in one of his plays: "Into what quarter peers my halcyon's bill?"

Whether sailors actually did use dead kingfishers for this purpose may be doubted. Kingfishers aren't easy to catch; and anyway sailors usually have better means for telling wind direction. Perhaps the belief only survived the better because everybody held it and nobody put it to the test.

Science News Letter, October 18, 1952